WE CLAIM:

1. A method of recognizing and classifying a physical presence occupying a vehicle seat having a occupancy sensing system, said method including the steps of:

sensing the output of an array of sensors that detect a physical presence in a seat;

applying the sensor array output as a vector representation to a neural net that was trained using a learning vector quantization algorithm; and

recognizing the sensor array output as falling within one of a group of predetermined classification patterns that represent a physical presence in the seat defined by size, weight, and physical orientation.

2. A method as set forth in claim 1, wherein the step of recognizing the sensor array output further includes the step of continuously reinitiating the method steps to redetermine the classification pattern.

3. A method as set forth in claim 1, wherein said method further includes the first steps of

entering into the neural net the predetermined value of the number of inputs that will be used in the sensor array;

entering into the neural net the predetermined value of the number of inputs that will be used in the sensor array;

entering into the neural net the predetermined number of output classes;

entering into the neural net the predetermined number of output units for each output class; and

entering into the neural net the trained output units.

4. A method as set forth in claim 1, wherein the step of recognizing the sensor array output further includes the steps of:

calculating the Euclidean distance from the sensor array output value to each of the output units of the neural net;

determining the nearest output unit to the sensor array output value;

determining the occupant classification that is associated with the said nearest output unit; and

outputting the determined classification to a higher level control system.

5. A method of recognizing and classifying a physical presence occupying a vehicle seat having a occupancy sensing system by training a neural network, said method including the steps of:

determining the number of times to process a training set of input values through a neural network for a first learning vector quantization algorithm;

determining the number of times to process a training set of input values through a neural network for a second learning vector quantization algorithm;

processing the set of training samples through the neural network the determined number of times using said first learning vector quantization algorithm;

adjusting one of the output units of the neural net each time one of said training samples is processed using said first learning vector quantization algorithm;

processing the set of training samples through the neural network the determined number of times using said second learning vector quantization algorithm;

adjusting two of the output units of the neural net each time one of said training samples is processed using said second learning vector quantization algorithm; and

storing the adjusted output units as the final trained values for the neural net.

6. A method as set forth in claim 5, wherein the step of processing the set of training samples using said first learning vector quantization algorithm further includes the step of determining the number of times to process a training set of input values through a neural network for a first learning vector quantization algorithm.

7. A method as set forth in claim 5, wherein the step of processing the set of training samples using said second learning vector quantization algorithm further includes the step of determining the number of times to process a training set of input values through a neural network for a second learning vector quantization algorithm;

8. A method as set forth in claim 5, wherein said method further includes the first steps of determining the number of desired classifications of occupants; and

determining the initial output units to have in each of the desired classes.

9. A method as set forth in claim 5, wherein the step of storing the adjusted output units further includes the step of processing a set of input values through the neural net to test the performance of the neural net after the output units have been adjusted.

10. A method as set forth in claim 9, wherein the step of processing a set of input values

through the neural net to test the performance of the neural net further includes the step of comparing the accuracy of the neural net to a predetermined value.

11. A method as set forth in claim 10, wherein the step of comparing the accuracy of the neural net to a predetermined value further includes the step of incrementing the number of output units for each classification by one.

12. A method of recognizing and classifying a physical presence occupying a vehicle seat having a occupancy sensing system, said method including the steps of:

sensing the analog output of an array of sensors that detect a physical presence in a seat;

converting the analog sensor array output into a digital vector expression;

applying the vector expression to a trained neural net having a predetermined learning vector quantization algorithm;

recognizing the output from the neural net as belonging to one of a variety of predetermined patterns representative of a physical presence in the seat;

determining which one of a predetermined series of classifications defined by size, weight, and physical orientation that the recognized pattern belongs to; and

continuously reinitiating the method steps to redetermine the classification.